OIPE
JUL 25 2005
PATENT & TRADEMARK OFFICE
PC106

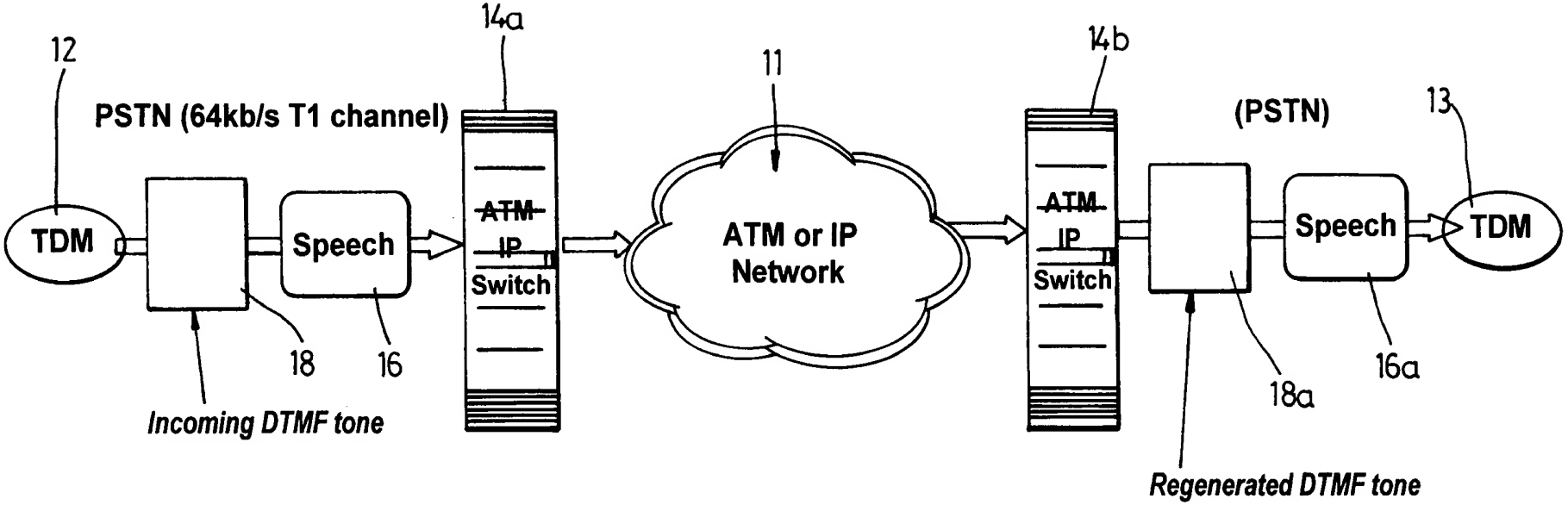

Fig. 1

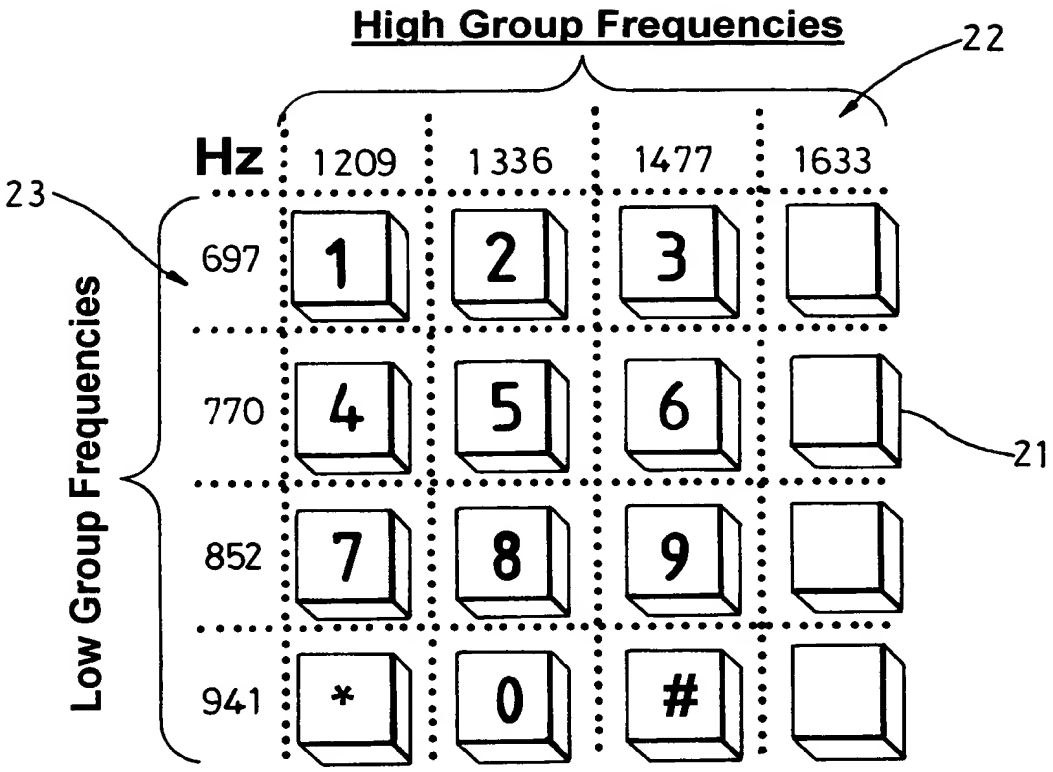
High Group Frequencies
22
Hz
1209
1336
1477
1633
23
697
770
852
941
Low Group Frequencies
1
2
3
4
5
6
7
8
9
*
0
#
21

Fig. 2

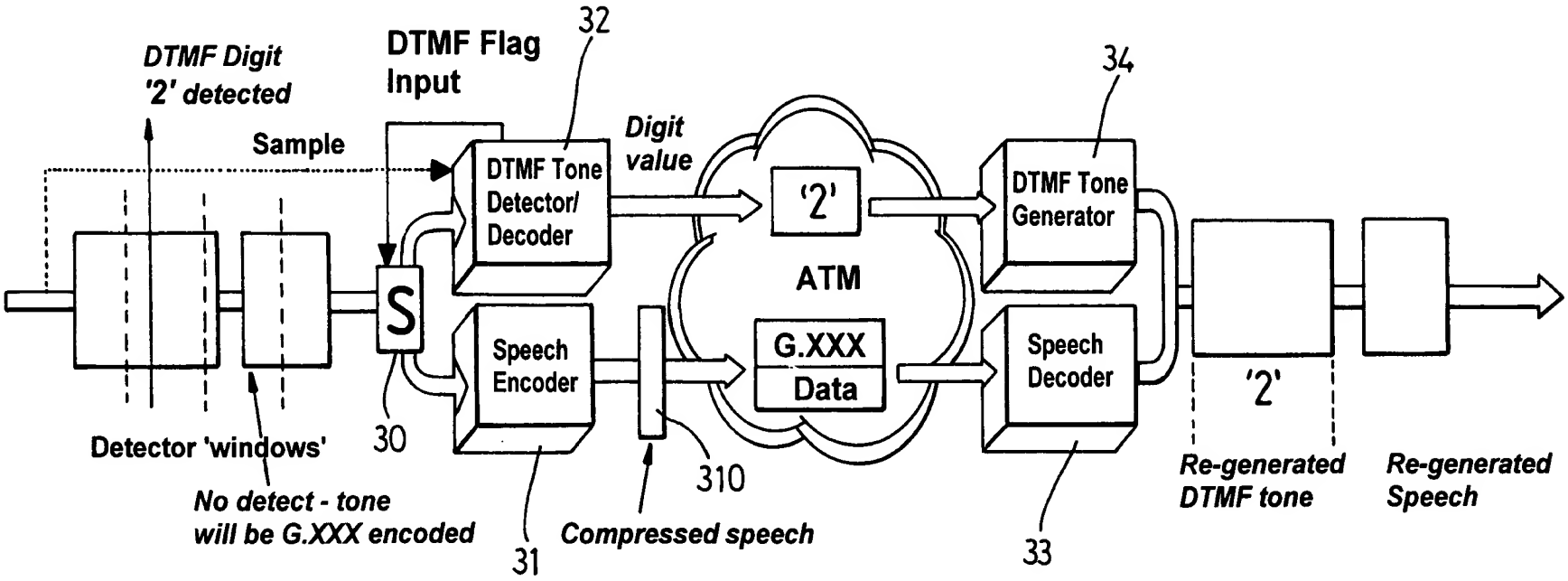
DTMF Digit
'2' detected
DTMF Flag
Input
32
34
Sample
Digit
value
DTMF Tone
Detector/
Decoder
'2'
DTMF Tone
Generator
ATM
S
Speech
Encoder
G.XXX
Data
Speech
Decoder
'2'
Detector 'windows'
30
310
No detect - tone
will be G.XXX encoded
31
Compressed speech
33
Re-generated
DTMF tone
Re-generated
Speech

Fig. 3

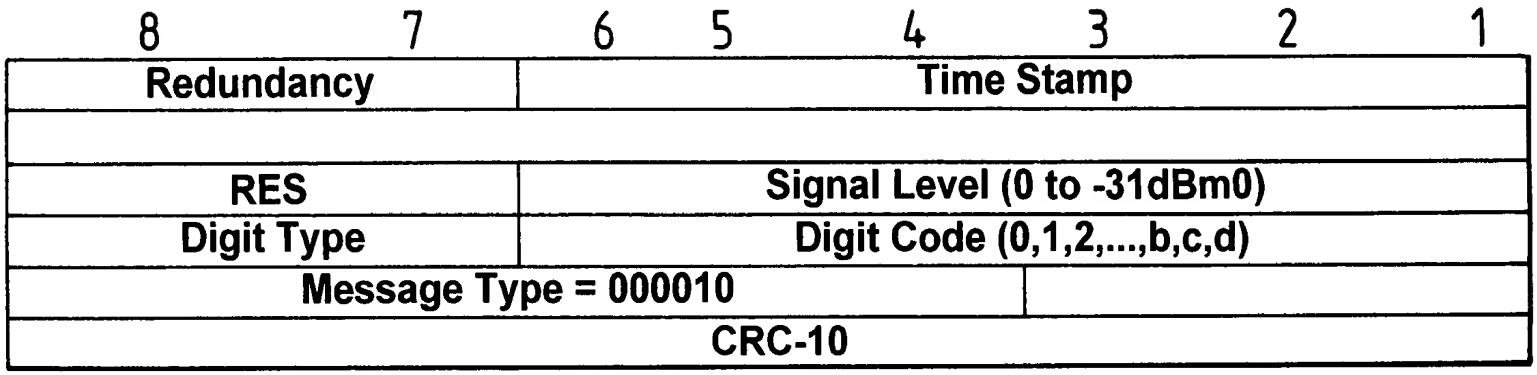
8 7 6 5 4 3 2 1
Redundancy
Time Stamp
RES
Signal Level (0 to -31dBm0)
Digit Type
Digit Code (0,1,2,...,b,c,d)
Message Type = 000010
CRC-10

Fig. 4

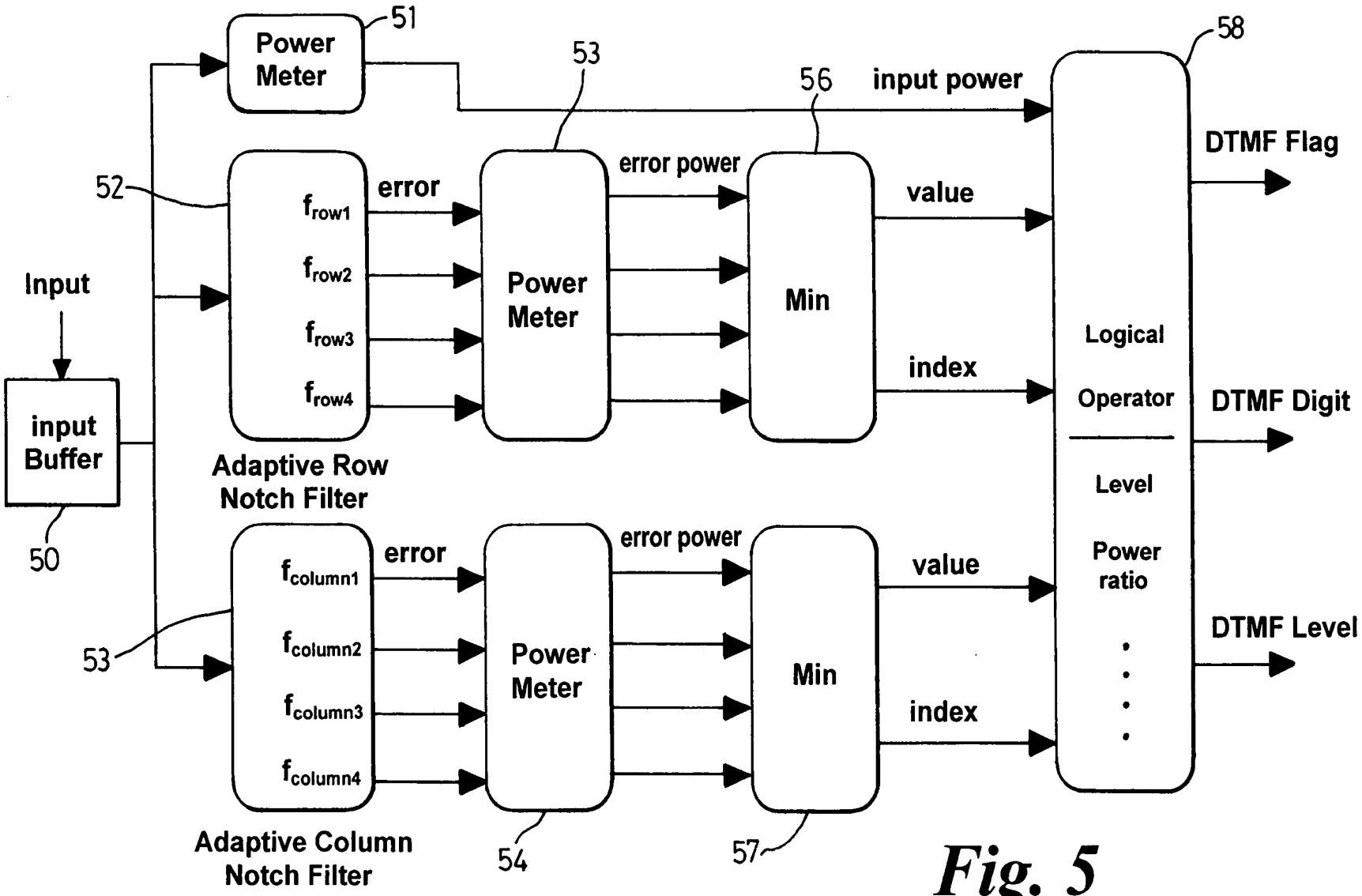
Power Meter
51
53
56
input power
58
DTMF Flag
52
error
error power
value
Input
Power Meter
Min
Logical Operator
index
DTMF Digit
input Buffer
Level
Power ratio
Adaptive Row Notch Filter
50
error
error power
value
DTMF Level
53
Power Meter
Min
index
Adaptive Column Notch Filter
54
57

Fig. 5

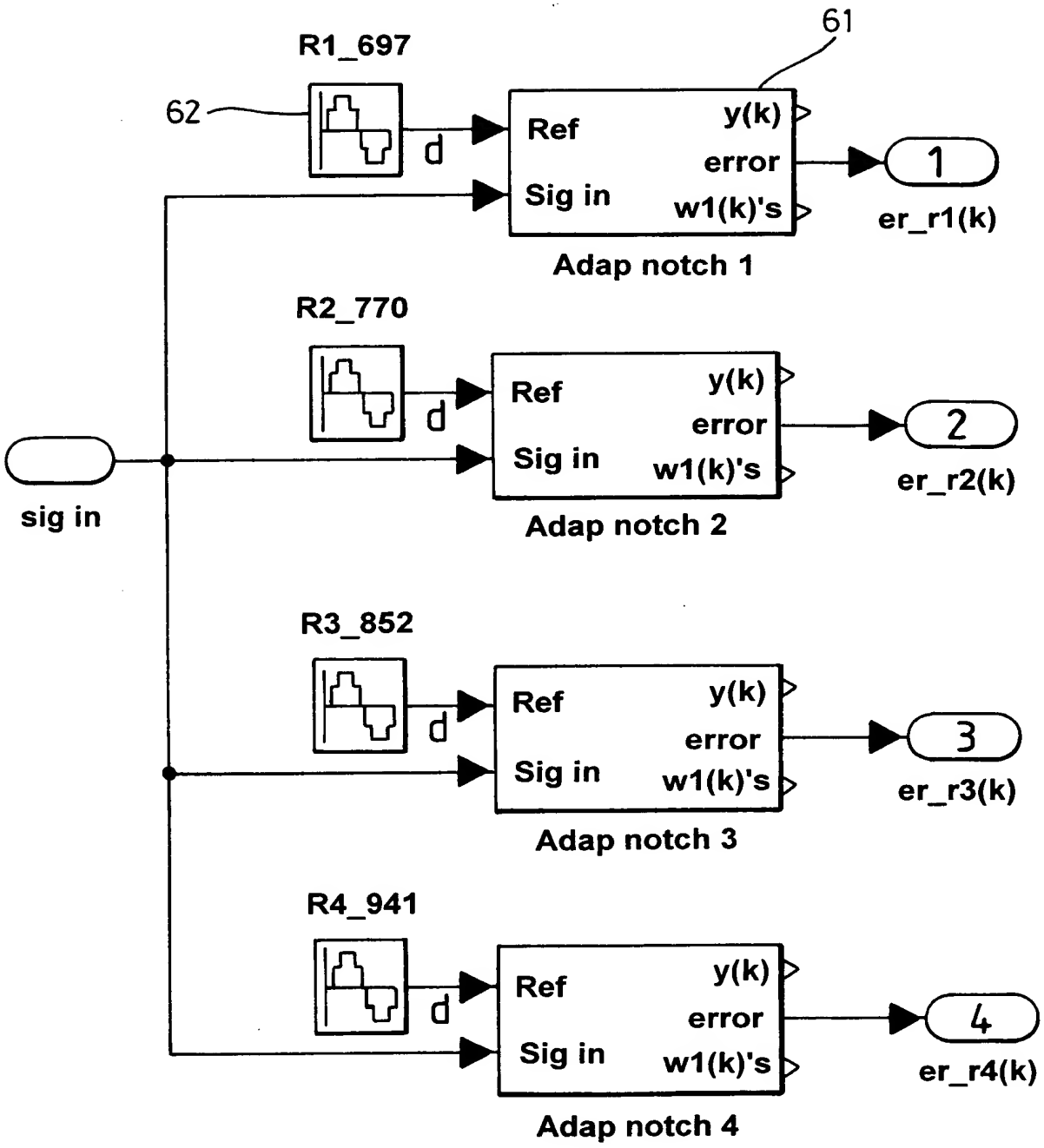
61
R1_697
62
d
Ref
Sig in
y(k)
error
w1(k)'s
1
er_r1(k)
Adap notch 1
R2_770
d
Ref
Sig in
y(k)
error
w1(k)'s
2
er_r2(k)
sig in
Adap notch 2
R3_852
d
Ref
Sig in
y(k)
error
w1(k)'s
3
er_r3(k)
Adap notch 3
R4_941
d
Ref
Sig in
y(k)
error
w1(k)'s
4
er_r4(k)
Adap notch 4

Fig. 6

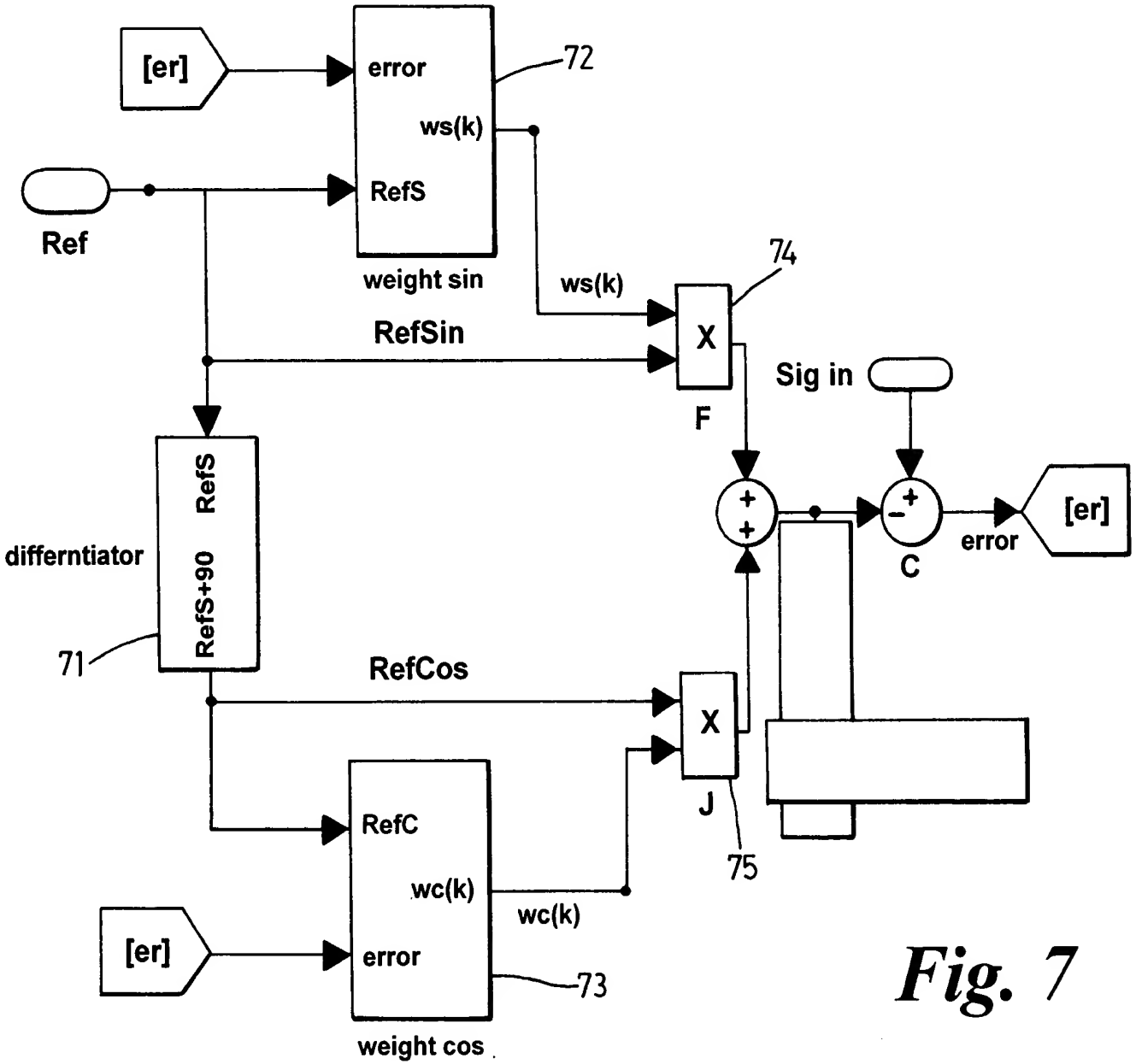
[er]
error
ws(k)
RefS
72
Ref
weight sin
ws(k)
74
RefSin
X
F
Sig in
differntiator
RefS
RefS+90
71
+
+
+
-
C
error
[er]
RefCos
X
J
75
RefC
wc(k)
wc(k)
[er]
error
73
weight cos

Fig. 7

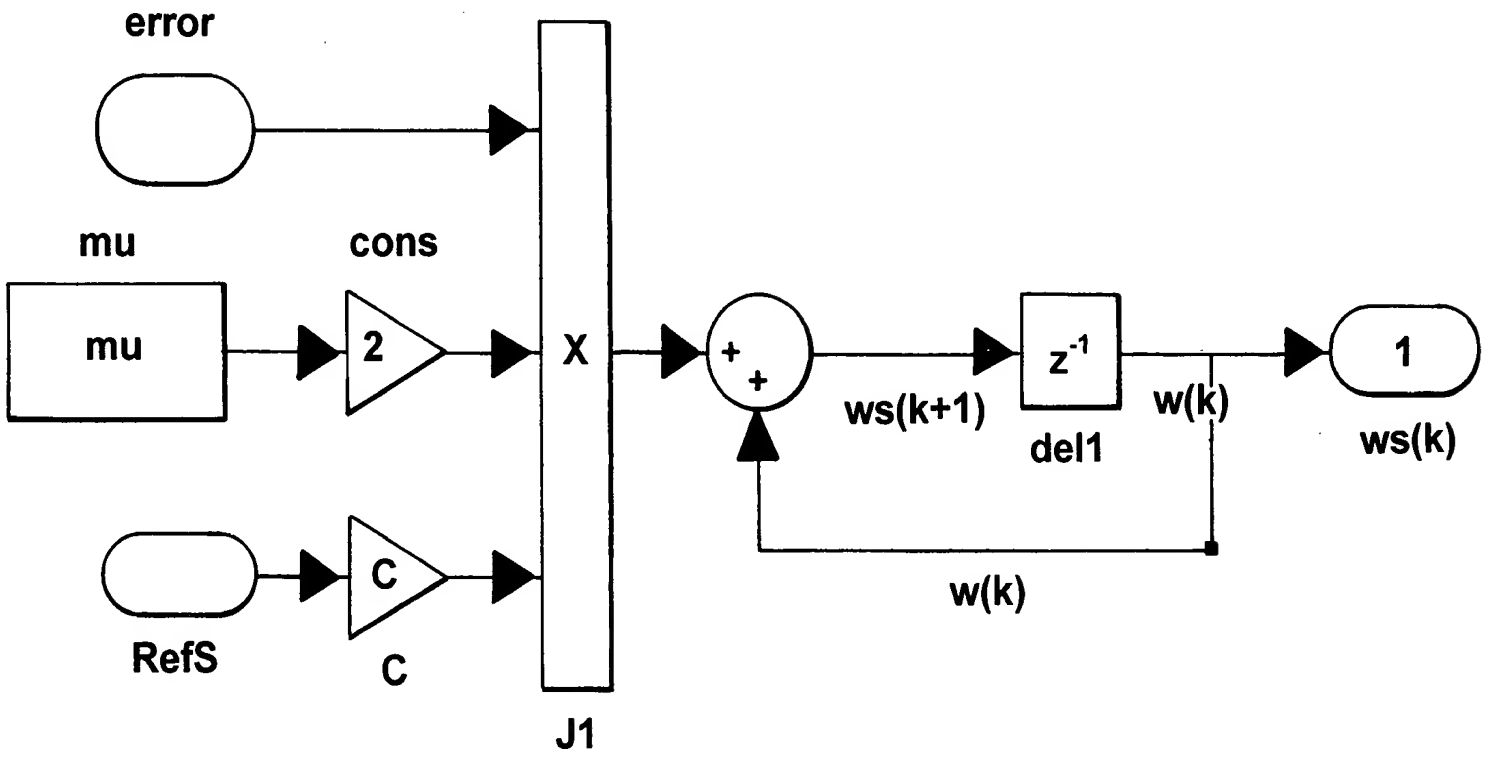

Fig. 8

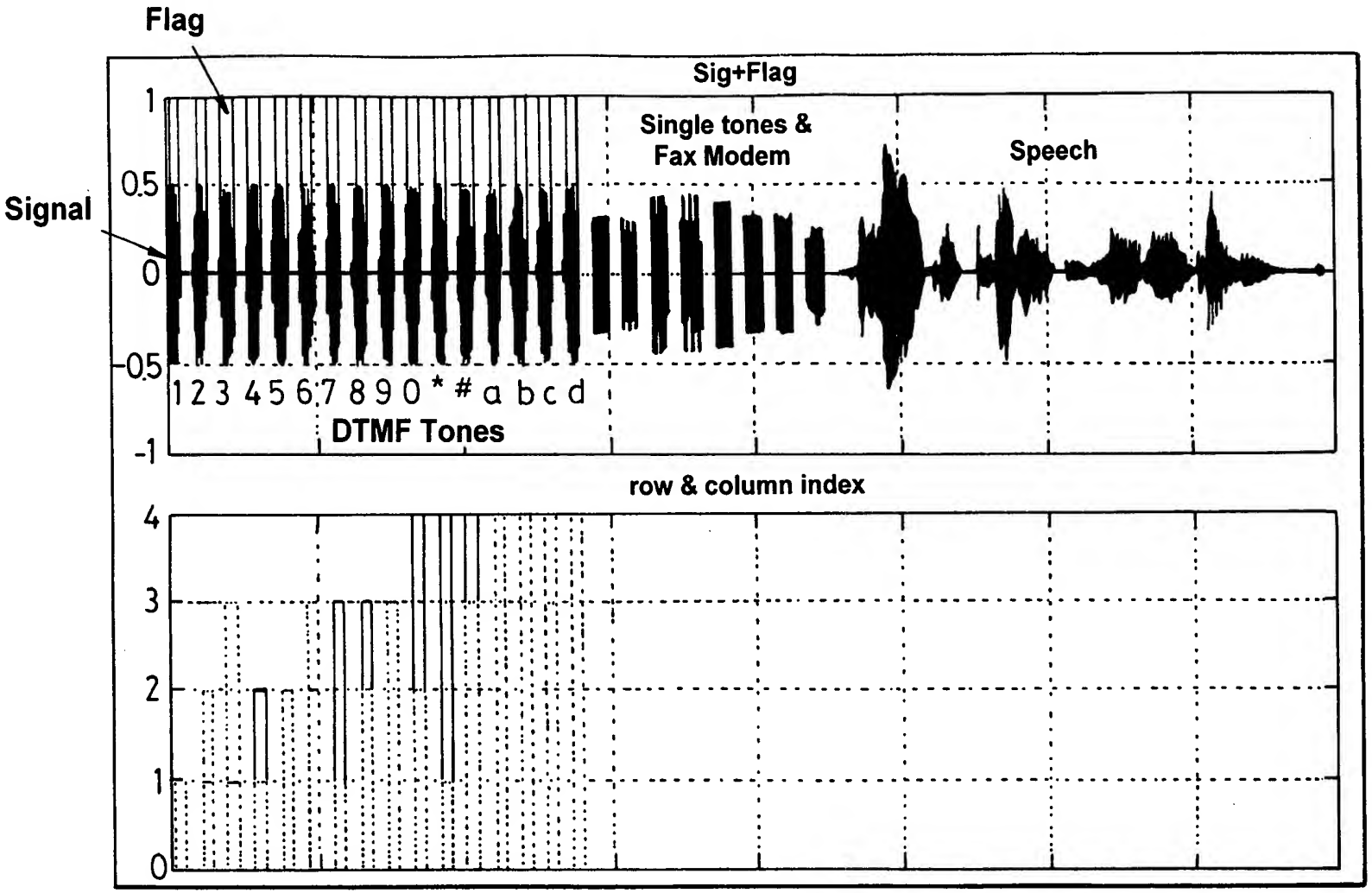
Flag
Sig+Flag
Signal
1
0.5
0
-0.5
-1
Single tones &
Fax Modem
Speech
1 2 3 4 5 6 7 8 9 0 * # a b c d
DTMF Tones
row & column index
4
3
2
1
0

Fig. 9